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The Logic of Asymmetric Survival: Vietnam's Hedging Behavior in China–Vietnam Relations through a Game-Theoretic Perspective

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Abstract

This paper develops a strategic game-theoretic model to explain Vietnam's hedging behavior amid intensifying China–U.S. great power competition. Existing studies often describe Vietnam's hedging qualitatively but lack a formal framework that clarifies when cooperation with China is sustainable and why different levels of hedging produce divergent strategic outcomes. This paper fills this gap by constructing a unified symbolic payoff matrix and transferable-utility cooperative game model to show how Vietnam's hedging directly shapes outside options, bargaining power, and the conditions under which cooperation becomes unstable. The analysis demonstrates that moderate hedging increases Vietnam's outside option without eliminating the cooperative surplus, making it the only strategy capable of sustaining autonomy while preserving cooperation. Scenario analysis—no hedging, strong hedging, and moderate hedging—further illustrates how inappropriate hedging levels can shift the cooperative game into a non-cooperative one, either by inviting dependence on China or provoking counter-pressure and heightened U.S. involvement. Policy implications highlight that Vietnam must maintain a calibrated hedging posture, strengthen diversified partnerships without alliance entanglements, and preserve domestic legitimacy to avoid destabilizing

dynamics. The findings enhance theoretical understanding of small-state strategies and offer practical guidance for sustaining a stable cooperative equilibrium in Southeast Asia.

Keywords: Vietnam; hedging; cooperative game theory; non-cooperative games; China– U.S. rivalry; strategic autonomy; ASEAN; great-power politics; foreign policy; security strategy.

1 Introduction

Vietnam's foreign policy has become increasingly complex as strategic competition between China and the United States intensifies across the Indo-Pacific. Situated at the intersection of this great-power rivalry, Vietnam seeks to safeguard its sovereignty, maintain economic growth, and preserve regime stability while avoiding entanglement in bipolar confrontation. This precarious position has often been described as "hedging," a strategy that blends selective cooperation, soft balancing, and diplomatic diversification. Yet, despite widespread acknowledgement of hedging as a central feature of Vietnam's foreign policy, scholarly understanding remains limited regarding the conditions under which hedging enables sustainable cooperation—and the thresholds at which it triggers coercive or destabilizing dynamics.

Existing analyses frequently rely on descriptive or qualitative approaches, leaving a gap in formal modeling that can clarify how Vietnam's hedging influences strategic incentives, cooperation levels, and potential shifts into non-cooperative behavior. As great-power rivalry sharpens, understanding these conditions is crucial not only for Vietnam's foreign policy but also for regional stability in Southeast Asia.

This study addresses this gap by developing a strategic game-theoretic framework to analyze Vietnam's hedging strategy amid China–U.S. competition. Through a unified symbolic payoff matrix and cooperative–non-cooperative game logic, the paper demonstrates that a moderate hedging posture is the only equilibrium that simultaneously sustains cooperative surplus, maintains Vietnam's strategic autonomy, and mitigates destabilizing pressures. By contrast, both insufficient and excessive hedging can shift the relationship toward asymmetric dependence or open confrontation.

In addition to introduction, the paper is structured into five sections. Section 2 reviews the existing literature on hedging, asymmetric relations, and game-theoretic approaches in international politics. Section 3 outlines the study's methodology, detailing the cooperative and non-cooperative game models used. Section 4 presents the case study, applying the framework to Vietnam's hedging amid China–U.S. competition. Section 5 offers a discussion of the findings and their broader implications. Section 6 concludes by summarizing the study's contributions and outlining key policy recommendations.

2 Literature Review

2.1 Theoretical Review

The theoretical debate on state behaviour in international relations has long been shaped by competing schools of Realism, Liberalism, and Constructivism. The selected literature within each tradition not only clarifies their core assumptions but also shows how these frameworks have evolved to address foreign policy analysis, institutions, and the social construction of international order. Together, these works provide the conceptual foundation for examining cooperative and non-cooperative strategic choices in bilateral relations.

Realism

The contemporary realist literature reflected in Rahman (2021), Jütersonke (2006), and Kirshner (2023) shows both continuity and adaptation within the tradition. Rahman (2021) offers a systematic review of neoclassical realism, highlighting how it moves beyond structural realism by integrating both independent variables (such as the distribution of power in the international system) and intervening variables (domestic-level factors like leadership perceptions, state–society relations, and institutional constraints) in foreign policy analysis. This approach underscores that systemic pressures alone do not mechanically determine state behaviour; rather, they are filtered through decision-makers' interpretations and domestic political structures. Such an argument is particularly relevant for explaining why states facing similar external constraints may adopt different foreign policy strategies or calibrate cooperation and confrontation differently.

Complementing this, Jütersonke (2006) revisits Hans Morgenthau's classical realism, arguing that his work is not simply an amoral theory of power but involves a "return to ethics" within power politics. Morgenthau's emphasis on prudence, responsibility, and the tragic nature of political action introduces a normative dimension often forgotten in later structural realist formulations. Jütersonke's interpretation suggests that realist thought can accommodate ethical judgment and not merely instrumental rationality, which is important for understanding how states may sometimes choose restraint or compromise even under competitive conditions.

Kirshner (2023), in his discussion of *An Unwritten Future*, reflects on realism's engagement with uncertainty and contingency in world politics, challenging overly deterministic readings of realist theory. He stresses that realists must grapple with indeterminacy, misperception, and the open-ended nature of international outcomes, rather than assume fixed, predictable responses to power shifts. Taken together, these contributions reveal a realist tradition that has become more nuanced and multi-layered: structural constraints remain central, but domestic politics, ethical considerations, and uncertainty all shape how states interpret and respond to their environment. This richer understanding is

crucial for analysing how states may oscillate between cooperative and non-cooperative strategies even under broadly similar systemic conditions.

Liberalism

The liberal literature, represented here by Johnson and Heiss (2023), Moravcsik (1992, 2010), MacMillan (2007), and Lynch (2009), develops a coherent yet internally diverse account of how preferences, institutions, and interdependence enable cooperation. Johnson and Heiss (2023) provide an up-to-date overview of liberal institutionalism, situating it within debates on international organization and global governance. They argue that international institutions help states manage collective action problems, reduce transaction costs, provide information, and generate expectations of reciprocity, making cooperation more likely than Realism would predict. This perspective directly supports the view that regional and global institutions can structure repeated interactions and shape the "rules of the game" in which states decide whether to cooperate or defect.

Moravcsik's contributions (1992, 2010) are foundational for liberal theories of international relations, shifting the focus from systemic power to state preferences derived from domestic society. In his 1992 work, he outlines a liberal alternative to both realism and institutionalism, arguing that national preferences—shaped by societal actors, economic interests, and domestic politics—precede and condition state strategies in the international arena. His 2010 primer simplifies and formalizes these claims, presenting three core assumptions: societal actors as the primary units of analysis, states as representative institutions aggregating those preferences, and the configuration of state preferences as the determinant of patterns of conflict and cooperation. This framework is highly relevant for explaining variation in states' willingness to enter into institutional commitments and trade agreements.

MacMillan (2007) focuses on liberal internationalism, tracing its intellectual roots and its vision of a world order built on democracy, human rights, and the rule of law. She shows how liberal internationalism links domestic regime type to international behaviour, suggesting that liberal democracies are more likely to cooperate and to embed their relations in institutions and norms. Lynch (2009) adds another layer by distinguishing liberalism from neoliberalism in the context of U.S. foreign policy, emphasizing how liberal ideas about openness, markets, and multilateralism intersect with—and sometimes conflict with—strategic and ideological goals. Across these works, liberalism emerges as a tradition that highlights the importance of domestic preference formation, the pacifying effects of economic interdependence, and the role of institutions and norms in sustaining cooperation. At the same time, the literature acknowledges tensions between liberal ideals and strategic interests, pointing to scenarios where expectations of cooperation may be undercut by domestic or geopolitical considerations.

Constructivism

The constructivist literature, exemplified by Wendt (1999), Onuf (2012/1989), and Zehfuss (2015), shifts the analytical focus from material capabilities and formal institutions to the social construction of international politics. Wendt's *Social Theory of International Politics* (1999) is one of the most influential statements of constructivism, arguing that "anarchy is what states make of it"—that is, the meaning and consequences of anarchy depend on shared ideas, not a fixed material logic. He develops the concepts of cultures of anarchy (Hobbesian, Lockean, Kantian) to show that whether states view each other as enemies, rivals, or friends is historically and socially constituted, and that these identities in turn shape interests and behaviours. Wendt's analysis challenges both realism and liberalism by insisting that interests are not given *ex ante* but are constructed through intersubjective processes.

Onuf's *World of Our Making* (2012; originally 1989) is widely regarded as the first explicit formulation of a constructivist approach to international relations. Onuf focuses on rules and rule as central to social life and foreign policy, arguing that people (and states) "make" the world through speech acts and rule-following practices; international relations is thus a web of socially constructed rules that define roles, obligations, and expectations. His work is deeply interdisciplinary, drawing on thinkers such as Austin, Foucault, Giddens, and Searle, and emphasizes that power and structure are embedded in language and practice rather than simply in material capabilities.

Zehfuss (2015) provides a critical engagement with constructivisms in international relations, focusing on Wendt, Onuf, and Kratochwil. She argues against treating constructivism as a monolithic school and instead highlights the diversity of constructivist thought: Wendt's more structural and state-centric approach, Onuf's rule-oriented and linguistic perspective, and Kratochwil's emphasis on practical reasoning and norms. Zehfuss also points to tensions and limitations within constructivism, including the risk of reintroducing rationalist assumptions or underestimating material constraints. Collectively, these works demonstrate that identities, norms, and discourse are not secondary to "real" interests but constitutive of them, and that any account of cooperation or conflict must consider how actors understand themselves and others, what rules they believe they are following, and how those beliefs evolve over time.

Synthesis

Across these three bodies of literature, a clear pattern emerges. Realist authors deepen our understanding of power, domestic filtering, ethics, and uncertainty in foreign policy; liberal authors highlight preference formation, institutions, and interdependence; and constructivist authors foreground identities, rules, and shared meanings. The combined insights of Rahman (2021), Jütersonke (2006), Kirshner (2023), Johnson and Heiss (2023), Moravcsik (1992, 2010), MacMillan (2007), Lynch (2009), Wendt (1999), Onuf (2012), and Zehfuss (2015) thus provide

a robust theoretical and conceptual landscape for analysing how states choose between cooperative and non-cooperative strategies. They also reveal important gaps and tensions— for example, between systemic and domestic explanations, material and ideational factors, and institutional constraints and social constructions— which a game-theoretic and case-based approach can help to integrate and operationalize in the empirical analysis that follows.

The theoretical landscape of international relations provides essential lenses for analyzing the strategic behavior of states, particularly in a bilateral relationship as historically dense and strategically contested as China–Vietnam relations. Among the most influential frameworks, Realism, Liberalism, and Constructivism offer distinct yet complementary explanations for cooperation, conflict, mistrust, and alignment patterns between states. By integrating these theories into the study of cooperative and non-cooperative game choices, this section clarifies the structural, institutional, and ideational forces shaping China–Vietnam interactions in security, politics, and economics.

Realism remains the dominant theoretical approach for explaining the core dynamics of China–Vietnam relations, rooted in power politics, material capabilities, and security competition. From a realist perspective, the international system is anarchic, and states must rely on self-help strategies to ensure survival. In this context, China's rise as a major power alters the regional balance of power, creating both structural pressures and strategic anxieties for Vietnam. Realists argue that China's behavior in the South China Sea— its militarization of artificial islands, expansive historical claims, and increased maritime patrols—reflects classical power-maximizing tendencies consistent with offensive realism. Vietnam, being a smaller state with limited military capacity relative to China, perceives these actions as a direct threat to its sovereignty, maritime rights, and national security. Consequently, Vietnam's strategic choices—modernizing its navy, strengthening defense ties with the United States, India, Japan, and Australia, and participating in multilateral security dialogues—are interpreted as balancing behaviors aimed at offsetting dependence and mitigating vulnerability.

Realism also highlights the persistence of security dilemmas in China–Vietnam relations: even defensive actions appear threatening to the other side, generating spirals of mistrust. For example, Vietnam's strengthening of its maritime militia is framed by Hanoi as defensive, yet is perceived by China as strategic resistance backed by foreign partners. Similarly, China's economic initiatives such as the Belt and Road Initiative (BRI) can be interpreted by Vietnam as tools of political influence rather than purely developmental efforts. In this view, the bilateral relationship is best described as a mixture of soft balancing, hedging, and asymmetric power bargaining, where cooperation in trade coexists with latent military rivalry. Realism, therefore, explains why high levels of economic interdependence do not eliminate geopolitical competition and why historical memories of conflict—such as the 1979 border war and recurrent maritime clashes—continue to undermine trust. Ultimately, realism underscores the structural constraints that shape both cooperative and non-cooperative

game strategies between China and Vietnam, particularly in the maritime domain where sovereignty and national interest are non-negotiable.

In contrast, Liberalism provides a more optimistic interpretation, emphasizing the potential for cooperation through mutual benefits, institutions, and interdependence. Liberal theories argue that as states become interconnected economically, the cost of conflict rises, creating incentives to maintain stability. This is especially relevant for China and Vietnam, whose bilateral trade relationship has grown dramatically since normalization in 1991. China is Vietnam's largest trading partner and an indispensable supplier of industrial inputs, machinery, and raw materials, while Vietnam serves as an increasingly important production hub within China-centered supply chains. Liberalism asserts that these economic links generate absolute gains for both sides, making cooperation rational even under asymmetry. Moreover, both states participate in regional and international institutions—including ASEAN Regional Forum (ARF), ASEAN+3, and the East Asia Summit—which offer platforms for dialogue, dispute management, and confidence building. These institutions may not fully resolve territorial disputes, but they help regulate interactions, reduce uncertainty, and encourage transparency.

Liberalism also stresses the role of complex interdependence, where multiple channels of interaction—trade, tourism, investment, cultural exchanges, and party-to-party diplomacy—create overlapping networks that moderate conflict. Vietnam's participation in free trade agreements such as the Comprehensive and Progressive Agreement for TransPacific Partnership (CPTPP) and the EU–Vietnam FTA introduces additional layers of economic governance and normative commitments that indirectly shape China–Vietnam relations by diversifying Vietnam's external ties. From a liberal viewpoint, even in the presence of territorial disputes, China and Vietnam maintain stable frameworks for border trade, pandemic cooperation, and infrastructure connectivity, demonstrating the constraining power of interlinked economic interests. Liberalism therefore explains why the two countries can separate economic cooperation from maritime tensions and why they frequently choose negotiation, working groups, and diplomacy rather than escalation. It highlights that cooperative game choices—particularly in trade and development—reflect mutual economic interdependence and the institutionalization of political and economic dialogue.

Constructivism offers a complementary perspective by focusing on identities, historical narratives, and social norms that shape how China and Vietnam perceive and interpret each other's actions. Constructivist theory argues that state behavior is not determined solely by material factors but also by shared meanings, social relationships, and ideational commitments. In the case of China–Vietnam relations, historical consciousness plays an especially influential role. Vietnam's national identity has been deeply shaped by resistance to foreign domination, particularly against Chinese imperial rule, creating a powerful narrative of resilience and autonomy that informs contemporary policy. This identity frames China as both a cultural reference point and a historical challenger, resulting in ambivalent

perceptions that shape public opinion, elite thinking, and national security strategies. China, for its part, views Vietnam through a lens of cultural closeness and hierarchical regional order, reinforcing expectations of deference rooted in historical Sinocentrism. These identity-based perceptions can explain why China's actions are often interpreted by Vietnam as domineering, even when framed as cooperative, and why China interprets Vietnam's hedging behavior as a betrayal of socialist solidarity.

Constructivism also underscores the importance of ideological ties between the Chinese Communist Party (CCP) and the Communist Party of Vietnam (CPV). Shared socialist identity allows for unique forms of party diplomacy, ideological dialogue, and elite-level exchanges aimed at building trust. These interactions are not easily explained by realism or liberalism, and they play a stabilizing role in bilateral relations. Constructivists argue that norms of socialist solidarity, respect for party legitimacy, and "comradely brotherhood" shape expectations of behavior and help manage tensions even during crises. Additionally, the rise of nationalism in both countries influences public opinion and constrains policymakers: anti-China sentiment in Vietnam and nationalist rhetoric in China make it politically costly to compromise on maritime claims. These social forces shape the strategic "rules of the game," influencing which cooperative or non-cooperative choices are politically feasible.

In sum, Realism explains the structural competition, power asymmetry, and security dilemmas underlying China–Vietnam tensions; Liberalism highlights economic interdependence and institutional incentives for cooperation; and Constructivism reveals the role of identity, history, and ideology in shaping perceptions and strategic choices. Together, these theories provide a comprehensive foundation for analyzing the cooperative and non-cooperative game dynamics of China–Vietnam relations.

A critical evaluation of Realism, Liberalism, and Constructivism reveals that each theory offers important but incomplete insights for interpreting China–Vietnam relations, and five major points clarify their strengths, constraints, and gaps. First, Realism provides the strongest explanation for strategic rivalry, power asymmetry, and the security dilemma, accurately capturing why Vietnam strengthens defense ties with external partners and why China's maritime assertiveness generates persistent mistrust; however, it is constrained by its narrow focus on material power and fails to account for the continued economic cooperation and ideological diplomacy between two socialist one-party states. Second, Liberalism explains the deep economic interdependence that binds China and Vietnam through trade, supply chains, and institutionalized dialogue, highlighting how absolute gains and ASEAN-led multilateralism encourage stability; yet its predictive power is limited because high trade flows have not prevented maritime confrontations, and institutions lack enforcement capacity in the South China Sea, exposing a gap between liberal assumptions and geopolitical realities. Third, Constructivism contributes essential understanding of how historical memories, national identity, and shared socialist ideology shape perceptions and diplomatic behavior, capturing why Vietnam remains cautious of Chinese intentions and why party-to-

party ties help manage crises; however, it struggles to explain material power shifts, defense modernization, and strategic hedging, showing that identity alone cannot account for hard-security outcomes. Fourth, when these theories are applied together, their constraints become visible: Realism overemphasizes conflict, Liberalism overstates cooperation, and Constructivism overvalues discourse, meaning none alone can explain why China and Vietnam simultaneously cooperate economically, communicate ideologically, and compete militarily. Fifth, the key gap across all three theories is their inability to fully capture the mixed-strategy behavior—selective cooperation, calibrated competition, and issue-by-issue bargaining—that characterizes China–Vietnam relations, thereby justifying the paper's use of game theory as a more flexible analytical tool to understand how both states choose between cooperative and non-cooperative strategies under shifting conditions of power, interests, and identity.

The concept of hedging in international relations is widely used to describe strategies that combine cooperation, limited balancing, and diversification to manage uncertainty in asymmetric environments. First, scholars such as Goh, Kuik, and Lim argue that hedging allows small states to avoid rigid alignment by blending engagement and riskmitigation behaviors, yet these works remain primarily typological rather than analytical. Second, research on asymmetric relations by Womack, Kang, and others highlights how small states seek autonomy when interacting with major powers, but these studies do not model how relative power shapes incentives for cooperation or coercion. Third, while game-theoretic approaches have been applied to alliances and deterrence, existing models rarely incorporate hedging as a dynamic strategic variable, leaving an absence of formal frameworks that connect hedging to payoff structures, outside options, and strategic equilibrium outcomes.

2.2 Empirical Review

The contemporary literature on Vietnam's strategic behaviour amid the escalating US– China rivalry converges around five major analytical insights that together illuminate both the logic and complexity of Hanoi's foreign policy choices. First, scholars widely agree that hedging constitutes the primary strategic posture adopted by Vietnam, reflecting its need to manage uncertainty while preserving long-term autonomy. Building on Kuik's (2021) seminal definition, hedging is best understood as an insurance-seeking strategy pursued under conditions of simultaneously high uncertainty and high strategic stakes, characteristic of a regional environment shaped by intense great-power competition. Rather than choosing outright alignment—either balancing with the United States or bandwagoning with China—Vietnam pursues contradictory but complementary policies, such as deepening defense ties with Washington while maintaining robust economic relations with Beijing. This approach enables Vietnam to retain flexibility, avoid costly strategic commitments, and mitigate the risk of overdependence on any single power.

Second, formal modelling approaches, most notably Xu's (2025) game-theoretical framework, reinforce this understanding by demonstrating that hedging yields the most favourable payoff for secondary states like Vietnam and the Philippines. Xu's model positions states along three strategic options: alignment with the United States, alignment with China, or hedging between the two. The model's equilibrium logic shows that hedging allows Vietnam to secure economic benefits from China—its largest trading partner—while simultaneously maintaining security guarantees and capacity-building support from the United States, particularly in the maritime domain. This dual orientation not only maximizes national interests but also provides a mechanism for navigating asymmetric interdependence with both great powers.

Third, empirical studies focusing specifically on Vietnam's hedging strategies—particularly those by Liu (2024) and Wu and Velasco (2024)—reveal that Vietnam's approach is more systematic, sophisticated, and comprehensive than that of the Philippines, which often exhibits more reactive or oscillatory behaviour depending on leadership transitions. Liu structures hedging into five operational components—indirect balancing, dominance denial, economic pragmatism, binding engagement, and limited bandwagoning—and demonstrates that Vietnam consistently employs all five, whereas the Philippines' strategic choices tend to fluctuate between partial hedging and periods of overt alignment with the United States. Wu and Velasco further highlight that Vietnam's multi-layered hedging reflects not only systemic pressures but also an effort to preserve policy space, maintain strategic autonomy, and avoid entrapment in polarizing great-power conflicts.

Fourth, neoclassical realist contributions, such as those by Marston (2024), broaden the analytical lens by showing that Vietnam's hedging cannot be understood solely through systemic pressures; rather, it emerges from an interaction between international structure and internal political and perceptual variables. Marston argues that elite threat perceptions, institutional preferences, bureaucratic interests, and historical memories— particularly those shaped by Vietnam's long and complex relationship with China—play essential roles in shaping the persistence and calibration of hedging. These domestic intervening variables mediate how Hanoi interprets the structural pressures generated by great-power rivalry, leading to a more durable and resilient hedging strategy than structural realism alone would predict.

Fifth, and finally, scholarship employing two-level game theory offers some of the most convincing explanations for the stability of Vietnam's foreign policy across leadership cycles. Studies by Ngan (2023), Hung, Binh, and Hiep (2025), and Dung and Ho (2025) demonstrate that Vietnam's external behaviour is deeply intertwined with the regimelegitimation imperatives of the Communist Party of Vietnam (CPV), as well as domestic political constraints and elite cohesion. Dung and Ho argue that the CPV maintains legitimacy through three key mechanisms—performance-based legitimacy, nationalism-based legitimacy vis-à-vis China, and defensive legitimacy against perceived external ideological threats—and these

mechanisms collectively constrain Vietnam from leaning too far toward either great power. Ngan's application of the two-level game framework to Vietnam's broader foreign policy evolution shows that Hanoi's shift from passivism to selective proactivism in areas such as the South China Sea and global economic integration arises from its ability to negotiate simultaneously at both the domestic and international levels. Likewise, the study of the India–Vietnam–China triangle by Hung and colleagues adds nuance by demonstrating that Vietnam's flexible balancing between the two Asian giants is made possible by the interplay between domestic political incentives and international bargaining dynamics.

Taken together, these five strands of scholarship provide a rich, multi-layered analysis of Vietnam's foreign policy behaviour. They collectively show that hedging remains the most rational and sustainable strategy for Vietnam under conditions of great-power rivalry; that the strategy is reinforced by formal modelling and empirical evidence; that Vietnam's hedging is notably more comprehensive than that of regional counterparts such as the Philippines; that domestic politics and elite perceptions play a crucial mediating role; and that regime-legitimation dynamics and two-level political interactions further entrench this strategic orientation.

The previous studies consistently show that Vietnam employs hedging across economic, security, and diplomatic domains to navigate China–U.S. competition. First, research details Vietnam's pattern of deep economic engagement with China alongside selective security cooperation with the United States, Japan, India, and Australia, demonstrating a balanced, autonomy-seeking posture. Second, studies emphasize how domestic legitimacy, nationalism, and South China Sea pressures shape Vietnam's cautious strategic choices, illustrating the complex interaction between internal and external constraints. Third, although these works provide rich descriptive insights, they reveal a clear research gap: existing empirical analyses lack a formal model explaining thresholds between cooperation and non-cooperation, do not theorize how hedging levels alter China's incentive structure, and offer no systematic explanation for when hedging becomes too weak (leading to dependence) or too strong (provoking coercion). This analytical gap motivates the need for a game-theoretic framework that captures these mechanisms.

3 Study Methodologies and Data Collection

This study employs a game-theoretic methodological framework to analyze Vietnam's strategic behavior in its interactions with the People's Republic of China within the broader rivalry between the United States of America and the People's Republic of China, addressing an important gap in the previous literature that has lacked formal modeling of strategic choices and the dual dynamics of cooperation and conflict. First, drawing on the theoretical foundations of non-cooperative and cooperative game theory developed by Barron in *Game Theory: An Introduction* (2024), the study constructs formal representations of the strategic options available to Vietnam and the People's Republic of China using normal-form and

extensive-form games; strategies such as resistance, accommodation, coercion, inducement, and hedging are positioned in a structured payoff matrix that incorporates not only material benefits and security costs but also domestic legitimacy and reputational consequences, thereby offering a level of analytical precision absent from earlier qualitative accounts.

Second, the study applies Powell's bargaining and conflict-response models from *In the Shadow of Power* (2020) to examine how Vietnam navigates asymmetrical power relations; by modeling Vietnam's decision-making as a bargaining game shaped by threat perception and the possibility of escalation, the study identifies equilibrium conditions under which Vietnam avoids extreme balancing or bandwagoning and instead adopts intermediate strategies that preserve autonomy while managing risks, thereby addressing the lack of predictive modeling in earlier hedging scholarship.

Third, the methodology incorporates repeated-game and signaling-game dynamics to capture the long-term and iterative nature of Vietnam–People's Republic of China relations; drawing on Barron (2024), the insights of Weiss and Agassi in *Game Theory for International Accords* (2023), and the experimental findings of Yoder and Haynes in *Signaling under the Security Dilemma* (2021), the study models Vietnam–People's Republic of China interactions as both repeated Prisoner's Dilemma and repeated Stag-Hunt scenarios, demonstrating how cooperation persists despite mistrust and how signaling problems undermine reassurance, explaining Vietnam's risk-averse and diversified approach to diplomacy in a manner that fills the gap concerning trust dynamics and uncertainty in the South China Sea.

Fourth, the methodology incorporates the work of Downs and Rocke in *Optimal Imperfection? Domestic Uncertainty and Institutions in International Relations* (2021), embedding domestic political variables into formal models of incomplete information; this approach formally integrates elite consensus, performance-based legitimacy, nationalism, and bureaucratic preferences into strategic calculations, demonstrating how internal institutional uncertainties influence Vietnam's external strategy and filling a significant gap in existing studies that treat domestic politics descriptively but do not mathematically integrate them into strategic decision contexts.

Fifth, the study employs a multi-actor and multi-level game-theoretic framework inspired by Meirowitz and Ramsay's methodological contribution in *Applied Game Theory* (2020) and strengthened by Marwala's insights in *Game Theory in Politics* (2023) and *Artificial Intelligence, Game Theory and Mechanism Design in Politics* (2023); this allows Vietnam to be modeled as a rational actor engaged simultaneously with the People's Republic of China, the United States of America, regional institutions such as the Association of Southeast Asian Nations, and its own domestic institutions, producing a mixed-strategy equilibrium in which Vietnam maximizes strategic autonomy by distributing commitments, deepening external

partnerships selectively, and leveraging institutional mechanisms such as the Association of Southeast Asian Nations, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, the Regional Comprehensive Economic Partnership, and the United Nations Convention on the Law of the Sea to alter regional payoff structures.

Taken together, these five methodological components produce a comprehensive framework that systematically evaluates when Vietnam cooperates with the People's Republic of China, when it resists pressure, and when it intensifies hedging behavior as structural or domestic conditions evolve; by replacing purely descriptive accounts with rigorously constructed game-theoretic models grounded in established scholarship, this methodology fills clear gaps in previous studies and provides a more predictive and analytically robust explanation of Vietnam's behavior under conditions of great-power rivalry.

The methodological approach integrates cooperative game theory, non-cooperative deviation analysis, and a unified symbolic payoff matrix to assess how varying levels of hedging shape strategic incentives for cooperation or coercion. First, the cooperative game framework is used to model the structural tendency toward cooperation, with joint payoffs and surplus distribution reflecting the economic interdependence and political stability shared by Vietnam and China. Second, non-cooperative game logic is applied to identify incentive-compatibility constraints and the specific conditions under which cooperation breaks down into coercive or conflictual behavior. This dual modeling approach captures both the inherent benefits of cooperation and the strategic pressures that may disrupt it.

The construction of the symbolic payoff matrix is based on secondary data and qualitative empirical evidence from existing scholarship on Vietnam's foreign policy, China–U.S. rivalry, and Southeast Asian security dynamics. Data sources include peer-reviewed journal articles, policy analyses, official government statements, diplomatic documents, and reputable think-tank reports such as those from CSIS, ISEAS–Yusof Ishak Institute, and the Asia Maritime Transparency Initiative. These sources inform the relative ordering of symbolic payoffs, including the conditions under which Vietnam's outside option increases, China's cooperative incentives decline, or U.S. involvement alters strategic calculations.

No numerical data or quantitative estimations are required; instead, the study relies on logical payoff structures derived from empirically grounded patterns of diplomatic behavior, economic dependence, and security interactions. This approach allows the model to remain analytically rigorous while closely reflecting real-world strategic dynamics.

4 Case Study: Game Choices in China–Vietnam Relations: Balancing Competition and Collaboration

4.1 Background: The China–Vietnam Relations

China–Vietnam relations constitute one of the most enduring and strategically complex bilateral relationships in Asia, and the long history between the two countries is best understood as a continuous pattern of coexistence between cooperation and conflict that persists into the present. This dual dynamic shapes every dimension of their political, economic, and security interactions.

First, the deep historical experience between China and Vietnam—stretching back more than two thousand years and including over a millennium of Chinese imperial rule—produced enduring cultural linkages while also generating a powerful tradition of resistance. Vietnam internalized Confucian statecraft, administrative systems, and cultural practices, yet these influences were repeatedly challenged by successful wars of independence, such as the victories of Ngô Quyn in the tenth century and Lê Li in the fifteenth century. These cycles of domination, resistance, and negotiated coexistence institutionalized a strategic culture in which emulation and mistrust coexist simultaneously, creating the long-term psychological and political foundations of modern Vietnamese foreign policy.

Second, ideological and political relations have likewise been characterized by intertwined cooperation and rivalry. The shared Marxist–Leninist orientation and one-party political systems of Vietnam and China facilitated close coordination during the First Indochina War and the Vietnam War, when China provided extensive military, logistical, and financial assistance. Yet this ideological affinity did not prevent deep conflict. As Ross (2021) explains, wartime solidarity masked persistent strategic divergences that resurfaced during the Sino–Soviet split, when Vietnam aligned more closely with the Soviet Union. This ideological division precipitated China's military intervention in Vietnam in 1979 and years of violent border clashes, an episode that Babaev (2023) argues entrenched Vietnam's perception of China as its most significant long-term security threat. Even after normalization in 1991, ideological cooperation coexists with underlying rivalry over influence within the socialist world.

Third, economic interdependence in the reform era illustrates the same pattern. According to Vuving (2023), Vietnam's foreign policy since the adoption of the economic renovation program known as Doi Moi has prioritized modernization through international economic integration, which made restoring relations with China in 1991 a strategic necessity. China is now Vietnam's largest trading partner and the dominant supplier of industrial inputs, while Vietnam has become one of China's most dynamic economic partners in Southeast Asia. However, this interdependence remains asymmetrical. Nguyen-Vo (2024) shows that Vietnam's structural dependence on Chinese raw materials, machinery, and intermediate

goods exposes it to geoeconomic vulnerabilities, limiting its ability to maneuver independently in times of crisis. This mixture of benefit and risk drives Vietnam's strategy of economic diversification through agreements with the European Union and members of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, as well as through strengthened trade relations with the United States.

Fourth, tensions in the South China Sea remain the most prominent domain where conflict and cooperation operate simultaneously. China's expansive maritime claims, islandbuilding, and militarization challenge Vietnam's claims over the Paracel Islands and the Spratly Islands. Vietnam seeks to manage these disputes by modernizing its maritime law-enforcement capabilities, pursuing international legal avenues, and promoting multilateralism through the Association of Southeast Asian Nations. Although diplomatic mechanisms—such as joint working groups—provide channels for crisis management, incidents involving fishing vessels and energy exploration continue to trigger friction, reflecting what Ross (2021) identifies as an enduring maritime security dilemma.

Fifth, Vietnam's broader strategic posture reflects a historically grounded hedging strategy in which cooperation with China is balanced by measures to preserve autonomy. Dung (2022) emphasizes that Vietnam conceives of itself as a self-reliant middle power that refuses to be compelled into choosing sides, a principle that aligns with its "four no" defense policy: no military alliances, no alignment against any country, no foreign military bases, and no use of force except for self-defense. Indeed, the conditional and interestdriven cooperation identified by Nguyen Manh Cuong, Mutai, and Aminpour (2025) in the Russia–China relationship helps to further explain Vietnam's dual strategy toward China, where economic engagement and political dialogue occur alongside deep mistrust rooted in historical experience and ongoing maritime disputes. Similar to Russia and China, Vietnam and China collaborate on trade, party diplomacy, and regional stability, yet this cooperation is never grounded in full strategic trust; rather, it is calibrated by Vietnam's awareness of power asymmetry, China's expanding regional ambitions, and the contentious dynamics in the South China Sea.

In addition, the structural and institutional constraints emphasized by Cuong, Chelabi, Hadziahmetovic, Sateeshchandra, and colleagues (2025) in the European Union's response to the Ukraine conflict provide a useful lens through which to understand Vietnam's limited room of ASEAN for maneuver. Like the European Union, Vietnam faces inherent constraints: proximity to a stronger neighbor, geographic vulnerability, and asymmetric economic dependence on Chinese machinery, raw materials, and intermediate goods.

These limitations of ASEAN shape Vietnam's cautious responses to Chinese assertiveness, encouraging the use of diplomacy, multilateral frameworks, and legal mechanisms rather than direct confrontation. At the same time, Vietnam works to diversify economic partnerships to gradually reduce structural dependence, mirroring the European Union's efforts to decrease reliance on Russian energy. Vietnam continually adjusts its hedging

strategy—deepening engagement with the United States, Japan, India, and Australia while maintaining a neutral, self-reliant posture. Together, these three strands of literature clarify why Vietnam–China relations remain defined not by a shift toward either conflict or cooperation alone, but by their persistent coexistence as Vietnam navigates the complexities of a changing regional and technological environment.

At the same time, Vietnam strengthens security partnerships with the United States, Japan, India, and Australia to counterbalance China's growing influence. China, for its part, seeks stable relations with Vietnam to support regional connectivity and further its Belt and Road Initiative, yet remains cautious of Hanoi's expanding ties with external powers. As Do (2022) argues, Vietnam's increasing diplomatic and strategic agency allows it to navigate this complex environment proactively. The result is a bilateral relationship defined not by linear progression toward conflict or cooperation, but by their persistent coexistence across historical, ideological, economic, and security dimensions, a pattern that continues to shape strategic behavior on both sides today.

4.2 Cooperative-Game Choice for China and Vietnam

Vietnam–China relations exhibit a structural tendency toward cooperation, driven by economic interdependence, regional stability, and mutual gains from coordination. However, cooperation is not guaranteed. The degree to which cooperative outcomes can be sustained depends critically on Vietnam's hedging strategy, which shapes outside options, bargaining power, and the incentives of both actors. This section models the relationship as a cooperative game with the possibility of transition to non-cooperative outcomes.

Let U_{VC}^{*} denote the joint cooperative payoff between Vietnam (V) and China (C). Let U_V^H represent Vietnam's outside option under hedging, and U_C^0 China's outside option.
The cooperative surplus is:

$$\Delta_H = U_{VC}^{*} - (U_V^H + U_C^0).$$

Cooperation is efficient whenever:

$$U_{VC*} > U_V^0 + U_C^0.$$

Stability requires:

$$\Delta_H > 0 \quad \text{and} \quad u_{\cdot i,O} > u_{\cdot i,K} \qquad (i = V,C).$$

Vietnam's hedging affects its outside option as:

$$U_{VH} = \begin{cases} U_{V0} & \text{for } N \text{ (No Hedging)}, \\ U_{V0} + \delta, & \text{for } H_m \text{ (Moderate Hedging)}, \\ U_{V0} + \Delta, & \text{for } H_s \text{ (Strong Hedging)}, \end{cases}$$

with $0 < \delta < \Delta$.

4.3 Payoff Matrix for Cooperation and Conflict

Vietnam chooses N, H_m, or H_s, while China chooses O (Cooperate) or K (Coerce).

Symbolic payoffs:

	O	K
N	(u_{N,O_V}, u_{N,O_C})	(u_{N,K_V}, u_{N,K_C})
H_m	$(u_{H_{V\,m},O}, u_{H_{C}m,O})$	$(u_{H_{V\,m},K}, u_{H_{C}m,K})$
H_s	$(u_{H_{V\,s},O}, u_{H_{C}s,O})$	$(u_{H_{V\,s},K}, u_{H_{C}s,K})$

With key relations:

- China prefers cooperation under moderate hedging: $u_C^{H_m,O} > u^{H_{C^m},K}$.
- Vietnam benefits most from cooperation under moderate hedging.
- Strong hedging creates incentives to deviate: $u^{H_{C^s},K} \geq u^{H_{C^s},O}$.

The stable cooperative equilibrium is:

$$(u_{H_{V\,m},O}, u_{H_{C}m,O}).$$

4.4 Conditions for Transition to a Non-Cooperative Game

The cooperative game collapses when:

- **Cooperative Surplus Collapse:**

$$\Delta_H \leq 0.$$

- **Incentives to Deviate:** For China: $u_{C}^{K} \geq u_{C}^{O}$.

For Vietnam: $u_{HV_{s,O}} \leq U_{VH_s}$.

- **Strategic Misperception:**
  Perceived threat from strong hedging shifts preferences toward coercion.
- **Domestic Political Constraints:**
  If domestic legitimacy or nationalism prevents cooperation:

$$u_{HV_{m,O}} < u_{HV_{m,K}} + \varepsilon.$$

4.5 Discussion: Scenario Analysis of Moderate Hedging and Strategic Choices

Scenario 1 – No Hedging (*N*). $\Delta_H > 0$ but Vietnam's share is small; cooperation is low-quality and asymmetric.

Scenario 2 – Strong Hedging (H_s). U_V^H is very high; $\Delta_H \leq 0$; cooperation breaks down into a non-cooperative game.

Scenario 3 – Moderate Hedging (H_m). $\Delta_H > 0$ and no actor prefers deviation. This produces the highest, most stable level of cooperation.

4.6 Policy Implications

Moderate hedging maintains $\Delta_H > 0$ and keeps cooperation stable. No hedging risks dependence; strong hedging risks confrontation. External partnerships should raise Vietnam's outside option without provoking instability. Domestic stability is critical to sustaining moderate hedging.

In sum, Vietnam–China relations are structurally a cooperative game, but the level of cooperation depends on hedging. Moderate hedging is the only strategy that preserves cooperative surplus, prevents deviation incentives, and sustains strategic autonomy. The finding is also relevant to the analysis by Nguyen Manh Cuong, Mutai, and Aminpour (2025) that Russia's increasing dependence on China after the Ukraine conflict has reduced its strategic autonomy. For Vietnam, this further illustrates the hedging strategy that relying on Russia is risky: a Russia closely aligned with China cannot consistently support Vietnam where interests diverge, especially in the South China Sea. Vietnam should therefore diversify partnerships to avoid indirect influence from China and protect its long-term strategic flexibility.

This study shows that Vietnam's hedging behavior can be most effectively interpreted through an integrated framework combining realism, liberalism, and constructivism, and the

game-theoretic model developed here advances this understanding by formally demonstrating how varying hedging levels shape cooperation incentives and the conditions under which the cooperative game becomes non-cooperative. From a realist perspective, Vietnam's moderate hedging represents rational adaptation to asymmetric power, avoiding both dependence on China and destabilizing over-alignment with the United States.

A liberal viewpoint emphasizes that economic interdependence, diversified partnerships, and institutional engagement sustain the cooperative surplus that keeps relations stable. Constructivism highlights how domestic legitimacy, historical memory, and identity norms constrain Vietnam's hedging thresholds, making strategic autonomy a normative as well as material objective. Together, these insights yield five key policy implications: Vietnam should (1) maintain a calibrated moderate hedging posture to preserve the cooperative surplus, (2) diversify partnerships without entering binding alliances, (3) reinforce domestic legitimacy and national identity to support stable external behavior, (4) expand multilateral and institutional engagement to anchor cooperative incentives, and (5) signal strategic predictability so China continues to prefer cooperation over coercion. Theoretically, this paper contributes by introducing a unified symbolic payoff model that bridges descriptive hedging scholarship with formal IR theory, clarifying the precise thresholds at which cooperation stabilizes or collapses.

5 Conclusions and Policy Suggestions

This paper has analyzed Vietnam's hedging behavior amid China–U.S. great-power competition through a unified cooperative–non-cooperative game model. The findings show that although Vietnam–China relations possess a natural tendency toward cooperation, this tendency alone is insufficient to ensure stability. The cooperative game framework illustrates how mutual cooperation contributes to trust building, conflict reduction, and peace in the South China Sea, creating conditions favorable for regional stability. However, the durability of cooperation depends on Vietnam's hedging posture, which determines outside options, bargaining leverage, and the likelihood of coercion. Insufficient hedging leaves Vietnam vulnerable to asymmetric dependence, while excessive hedging risks provoking Chinese counter-pressure and escalating great-power tensions. The symbolic payoff matrix developed in this study clarifies the thresholds at which cooperation stabilizes or collapses, demonstrating that moderate hedging is the only equilibrium consistent with both cooperative surplus and strategic autonomy. In the long run, hedging is not merely a defensive tool but a developmental imperative, enabling Vietnam to diversify economic opportunities, mitigate geopolitical vulnerabilities, and secure the strategic space necessary for sustainable national development. This study's theoretical contribution lies in formalizing hedging through a cooperative–non-cooperative game structure, offering a precise analytical model that bridges qualitative hedging scholarship with formal IR theory.

Based on these insights, five policy suggestions follow. First, Vietnam should maintain a calibrated moderate hedging strategy that raises its outside option while keeping cooperation attractive for China, particularly in maritime matters. Second, it should continue diversifying economic, technological, and security partnerships with the United States, Japan, India, Europe, and ASEAN to underpin long-term development without entering rigid alliances. Third, Vietnam must reinforce domestic legitimacy, national unity, and institutional capacity to ensure that hedging remains stable under external stress. Fourth, deeper engagement with ASEAN mechanisms, international law, and multilateral diplomacy will strengthen cooperative norms and advance peace and trust in the South China Sea. Fifth, Vietnam should maintain transparent and predictable strategic signaling to both China and the United States, ensuring that moderate hedging is understood as a long-term developmental and stabilizing strategy, not an alignment shift. Collectively, these policies support autonomy, stability, and sustainable development in an increasingly competitive Indo-Pacific environment.

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The author declares no competing interests.

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